

**Abstract of the Disclosure**

A test system is provided for simulating pre-tensioner systems that use pyrotechnic gas generators. In a preferred form, the test system includes a pneumatic cylinder energized by pressurized air from an accumulator and passing through a fast acting ball valve. A substantially linear relationship is established between accumulator pressure and the time rate of change of acceleration of a piston in the pneumatic cylinder. Use of the test system allows improved evaluation of seat belt systems employing pre-tensioners with pyrotechnic gas generators.